

REMARKS

Claims 44-57 have been added. Claims 1-14, 25-31 and 41-57 remain in the application. This Preliminary Amendment accompanies a request for Continued Prosecution application. Examination of the claims in this preliminary amendment is requested.

The undersigned has discovered an inadvertent error in the specification. This error switched the values for the number of grain boundaries with the exemplary erase area. This error resulted in a comparison between layer 16 and layer 18 that is incorrect, given that if layer 16 has smaller grains than layer 18, layer 16 could not possibly have a greater number of grain boundaries in a given area than layer 18. As a result, the specification is amended to correct this inadvertent error. Applicant respectfully asserts that such a correction does not introduce new matter.

In addition, the specification is amended at pages 4 and 8, to include additional description of Figs. 3 and 8, respectively. Such amendments simply describe what is plainly shown in these Figs. and therefore are not new matter.

Fig. 8 has been amended as shown in the enclosed marked-up-in-red copy thereof. The amendments to Fig. 8 are supported by text appearing at least at p. 4, line 5 through p. 9, line 5 of the specification as originally filed. No new matter is added by the amendments to Fig. 8. The Examiner's approval of the amendments to Fig. 8 is requested.

Revised formal drawing is enclosed herewith by separate cover addressed to the Chief Draftsman.

Claims 1, 2, 7, 9, 41, and 42 stand rejected under 35 U.S.C. §102(e) as being anticipated by Araki et al., U.S. Patent No. 5,882,994. Claims 3, 4, 5, 6, 8, 10, 11, 12, 13, 14, 25, 26, 27, 28, 29, 30, 31 and 43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Araki et al., U.S. Patent No. 5,882,994.

→ Claim 1 recites "forming a floating gate over a substrate, the floating gate having an inner first portion and an outer second portion; and providing conductivity enhancing impurity in the inner first portion to a greater concentration than conductivity enhancing impurity in the outer second portion", which is not taught or disclosed by Araki et al.

→ Similarly, claim 9 recites "forming a first layer of conductively doped semiconductive material over a semiconductive substrate; forming a second layer of substantially undoped semiconductive material over the first layer", which is not taught or disclosed by Araki et al.

The Examiner states (p. 3) that "Specifically, applicant argues that Araki discloses a three layered structure of non-doped, doped, and non-doped polysilicon to form the floating gate. The first two layers of Araki's floating gate structure can be characterized as one layer. The layer is in contact with the gate dielectric and is conductively doped." The Examiner is mistaken on multiple grounds.

The purpose of 35 U.S.C. §102 is to prevent an applicant from claiming subject matter that is already in the public domain. As a result, the PTO and Federal Circuit provide that §102 anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990).

Applicants note the requirements of MPEP §2131, entitled "Anticipation - Application of 35 U.S.C. 102". This MPEP section states, in a subsection entitled "TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM" that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

"The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

The rejection of claims 1, 2, 7, 9, 41 and 42 is defective at least because it fails to conform to the principles outlined by the courts and summarized in the MPEP for anticipation under 35 U.S.C. §102.

The principles outlined above are further reinforced by MPEP §2121.01, entitled "Use of Prior Art in Rejections Where Operability Is In Question". This MPEP section states that "In determining that quantum of prior art disclosure which is necessary to declare an applicant's invention 'not novel' or 'anticipated' within section 102, the stated test is whether a reference contains an 'enabling disclosure'...." *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968). A reference contains an "enabling disclosure" if the public was in possession of the claimed invention before the date of invention.

Araki does not provide an enabling disclosure of the invention as recited in any of these claims, as is evidenced by comparison of what Araki does in fact teach, the claims and the Examiner's completely inappropriate mischaracterization of what Araki et al. do in fact teach.

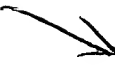
The Examiner states that the first two layers taught by Araki et al. "may be considered to be a single, doped layer." However, Araki et al. teach (col. 3, lines 23-25 and 31-36) formation of a floating gate comprising three layers, "such as non-doped polysilicon/impurity doped polysilicon/non-doped polysilicon."

→ Araki et al. teach (col. 1, lines 56-64) that it is undesirable to form a first layer of a floating gate from doped polysilicon, because then "phosphorus within floating gate 84 is diffused into the cell gate oxide film" and because "it invokes a problem concerning reliability due to an increase in the leak current."

Accordingly, Araki et al. do not provide an enabling disclosure of the invention as recited in any of claims 1, 2, 7, 9, 41 and 42.


The Examiner states (p. 3) that "Araki [sic] discloses a dopant concentration of $1 \times 10^{20} \text{ cm}^{-3}$ in the first layer and a dopant concentration of none in the second layer (Col. 5, lines 14-17)." The Examiner is mistaken.

The quoted text is reproduced below:



In this embodiment, the distribution of impurity density in polysilicon is divided into three layers of non-doped polysilicon layer/polysilicon layer containing phosphorus of about $1 \times 10^{20} \text{ cm}^{-3}$ /non-doped polysilicon layer.

See also similar text appearing at col. 3, lines 20-25. Simply misreading or misunderstanding what Araki et al. do say fails to transform the teachings of Araki et al. in the manner proposed in the Office Action. Araki et al. simply do not provide the teachings relied on by the Office Action. For at least these reasons, the rejection of claims 1, 2, 7, 9, 41 and 42 is improper and should be withdrawn, and these claims should be allowed.



Claim 25 recites "forming a first layer of polysilicon over a substrate to a first thickness; doping the first layer to a degree sufficient to define a sheet resistance of between 300 ohm/sq. and 400 ohm/sq.; after the doping, forming a second layer of polysilicon over the first layer of polysilicon to a second thickness", which is not taught, disclosed, suggested or motivated by Araki et al.

Araki et al. teach that it is undesirable to form a first doped polysilicon layer in forming a floating gate transistor, for reasons noted above. It is a main intent of Araki et al. to provide a first layer that is undoped, and this is done for the intended purpose of separating the doped layer from the gate oxide. Applicants note that MPEP §2143.01 indicates that "THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE", and that if the modification does render the prior art unsatisfactory for its intended purpose, there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Applicants further note the requirements of MPEP §2145(X), entitled "ARGUING IMPROPER RATIONALES FOR COMBINING REFERENCES", section D(2), which states, inter alia, that "It is improper to combine references where the references teach away from their combinations."

Applicants additionally note the requirements of MPEP §2141.02, entitled "Differences Between Prior Art and Claimed Invention", stating that "PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS".

This MPEP section further states that "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v.*

Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)".

→ Araki et al. teach directly away from any such disclosure. Araki et al. teach that doping of the first layer, that is, the layer immediately atop the gate dielectric, is inappropriate.

Moreover, if one does, arguendo, assume that it is appropriate to construe the teachings of Araki et al. as suggested in the Office Action, the dopant, which Araki explicitly teaches is contained in the second layer, must somehow be distributed into the first and second layers, with the logical result that the dopant concentration is decreased because it is now spread over a larger volume than is taught by Araki et al. How does the

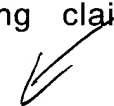
→ Examiner propose to evaluate the resultant concentration? By what rationale does the Examiner justify this? What teaching is there contained within Araki to provide guidance for these modifications, or to indicate the desirability of making these modifications? The Examiner has identified no such guidance in Araki et al. for the simple reason that Araki et al. provide no such guidance.

Applicants note the requirements of MPEP §2145, entitled "Consideration of Applicant's Rebuttal Arguments", at subsection X entitled "ARGUING IMPROPER RATIONALES FOR COMBINING REFERENCES" in sub-subsection (B), entitled "Obvious To Try Rationale". This MPEP section states that "An applicant may argue the examiner is applying an improper "obvious to try" rationale in support of an obviousness rejection.

"The admonition that 'obvious to try' is not the standard under Section 103 has been directed mainly at two kinds of error. In some cases, what would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful In others, what was 'obvious to try' was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it." *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988) (citations omitted) (The court held the claimed method would have been obvious over the prior art relied upon because one reference contained a detailed enabling methodology, a suggestion to modify the prior art to produce the claimed invention, and evidence suggesting the modification would be successful.). See the cases cited in *O'Farrell* for examples of decisions where the court discussed an improper "obvious to try" approach. See also *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) and *In re Ball Corp.*, 925 F.2d 1480, 18 USPQ2d 1491 (Fed. Cir. 1991) (unpublished) for examples of cases where appellants argued that an improper "obvious to try" standard was applied, but the court found that there was proper motivation to modify the references."

There is simply no teaching or guidance within Araki et al. to attempt to modify Araki et al. as suggested by the Examiner.

Further, simply stating a conclusion that "it would have been obvious" to combine teachings from references does not meet the standards for a rejection under 35 U.S.C. §103(a) as set forth in The Manual of Patent Examination Procedure at §706.02(j) entitled "Contents of a 35 U.S.C. 103 Rejection." This MPEP section states that three basic criteria must be met in order to establish a prima facie case of obviousness.

The first of these is that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. The Office Action fails to show that the subject matter of any of Applicants pending claims is suggested or motivated by the teachings of the reference. 

The second requirement of MPEP §706.02(j) is that there must be a reasonable expectation of success. The third requirement is that the prior art reference (or references when combined) must teach or suggest all of the claim limitations.

Since all of the cited references are silent with respect to a floating gate transistor with the first layer being doped, combining their teachings cannot possibly provide the invention as recited in any of Applicant's claims.

As a result, there cannot possibly be a reasonable expectation of success from combining the teachings of the references. The rejection of the claims fails all three components of the test for an obviousness rejection as set forth in the MPEP.

Further, no evidence has been provided as to why it would be obvious to combine these references with the Araki et al. reference. Evidence of a suggestion to combine may flow from the prior art references themselves, from the knowledge of one skilled in the art, or from the nature of the problem to be solved. However, this range of sources does not diminish the requirement for actual evidence. Further, the showing must be clear and particular. See *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

Accordingly, the rejection of claim 25 should be withdrawn, and claim 25 should be allowed.

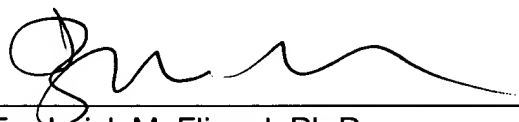
Dependent claims 2-8, 10-14, 26-31 and 41-43 are allowable as depending from allowable base claims and for their own recited features which are neither shown nor suggested by the prior art.

New claims 44-57 are similar to claims already pending in the application, but differ in scope. New claims 44-57 are supported at least by text appearing at p. 4, line through p. 9, line 5 of the application as originally filed. No new matter is added by new claims 44-57. New claims 44-57 distinguish over the art of record and are allowable.

In view of the foregoing, allowance of claims 1-14, 25-31 and 41-57 is requested. The Examiner is requested to phone the undersigned in the event that the next Office Action is one other than a Notice of Allowance. The undersigned is available for telephone consultation at any time during normal business hours (Pacific Time Zone).

Respectfully submitted,

Dated: Dec. 20, 2000

By: 
Frederick M. Fliegel, Ph.D.
Reg. No. 36,138